

ICD-10 Procedure Coding System (ICD-10-PCS)

From *The Endangered Medical Record: Ensuring Its Integrity in the Age of Informatics* by Vergil Slee, et al (Tringa Press, 2000).

The Health Care Financing Administration (HCFA) is responsible for the maintenance of the procedure coding system for reporting inpatient procedures for Medicare and Medicaid. The system in use is the classification in Volume 3 of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)¹. In view of the limitations of ICD-9-CM for this purpose as perceived by HCFA, HCFA contracted with 3M Health Information Systems to develop a new procedure coding system to be used with the forthcoming disease coding system, the International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM), being developed by the United States National Center for Health Statistics. The final draft of the new system, called ICD-10 Procedure Coding System (ICD-10-PCS), was placed on the Internet for review in June 1998.²

It should be pointed out that the new procedure coding system does not have "International Classification of Diseases" in its name, but simply "ICD-10." This title was adopted presumably to link the procedure coding system to the disease classification, ICD-10-CM with which it has been designed to be used. Unlike the ICD-10-CM, which is a modification of the "parent" ICD-10, ICD-10-PCS is an entirely free-standing coding system. There is no "international" procedure classification to modify or with which to maintain a relationship. Furthermore, ICD-10-PCS is clearly labeled to be used for coding, i.e., compressing a description of a procedure into a seven-character representation. ICD-10-CM is a classification, or grouping system.

The comments which follow are based on the Internet documents (which will be referred to here as the [3M HIS] "Working Paper"), which consist of

"Development of the ICD-10 Procedure Coding System (ICD-10-PCS)"
Training Manual
Tabular List
Alphabetic Index

The four objectives stated as followed in developing ICD-10-PCS were:

Completeness,
Expandability,
Multiaxial structure, here defined as "each code character having the same meaning within a specific procedure section and across procedure sections to the extent possible."
Standardized terminology.

¹ About 3,500 categories of procedures were provided in the original publication, 1978.

² 8-31-98 <http://www.hcfa.gov/stats/icd10/icd10.htm>

Additional constraints noted by the authors are that:

Diagnostic information is not included in the procedure description
 Not Otherwise Specified (NOS) option is not provided
 There is limited use of the Not Elsewhere Classified (NEC) option
 All possible procedures can be described

ICD-10-PCS is a modular code. The codes are alphanumeric, with 7 characters, each with 34 possible values: digits 0-9 and 24 alphabetic characters. Unlike ICD-10 and ICD-10-CM, the characters “I” and “O” are not used because to use them would present confusion with the numerals “1” and “0”. Each procedure is expressed by the full 7 characters. The Working Paper states that the term “procedure is used to refer to the complete specification of the seven characters.”

Procedures are found in 16 Sections shown in the table below. The character designating the Section is the first character in a procedure code:

ICD-10-PCS Sections	
Code	Title
0	Medical and Surgical (31 sections)
1	Obstetrics
2	Placement (2 sections)
3	Administration (2 sections)
4	Measurement and Monitoring
5	Imaging
6	Nuclear Medicine
7	Radiation Oncology
8	Osteopathic
9	Diagnostic Audiology and Rehabilitation
B	Extracorporeal Assistance and Performance
C	Extracorporeal Therapies
D	Laboratory (8 sections)
F	Mental Health
G	Chiropractic
H	Miscellaneous

Each of the seven characters which form a procedure code has the same meaning within a Section, but may have different meanings in different Sections, as shown in the following table:

<i>ICD-10-PCS Code Character Meaning, by Section</i> ³						
Characters						
1 Code and Name	2	3	4	5	6	7
0 = Medical and Surgical	Body System	Root Operation	Body Part	Approach	Device	Qualifier
1 = Obstetrics	Body System	Root Operation	Body Part	Approach	Device	Qualifier
2 = Placement	Anatomical Regions / Orifices	Root Operation	Body System / Region	Approach	Device	Qualifier
3 = Administration	Physiological Systems and Anatomical Regions	Root Operation	Body System / Region	Approach	Substance	Qualifier
4 = Measurement and Monitoring	Physiological Systems	Root Operation	Body System	Approach	Function	Qualifier
5 = Imaging	Body System	Root Type	Body Part	Contrast	Contrast / Qualifier	Qualifier
6 = Nuclear Medicine	Body System	Type	Body Part	Radionuclide	Radio- pharmaceutical	Qualifier
7 = Radiation Oncology	Body System	Modality	Treatment Site	Ports / Isotopes	Equipment	Qualifier / Risk Structure
8 = Osteopathic	Anatomical Regions	Root Operation	Body Region	Approach	Method	Qualifier
9 = Diagnostic Audiology and Rehabilitation	Type	Test / Method		Body Part	Equipment	Qualifier
B = Extracorporeal Assistance and Performance	Physiological Systems	Root Operation	Body System	Duration	Function	Qualifier
C = Extracorporeal Therapies	Physiological Systems	Root Operation	Body System	Duration	Qualifier	Qualifier
D = Laboratory	Type of Laboratory	Analyte		Specimen Source		Method
F = Mental Health	Type	Type Expansion	Qualifier	Qualifier	Qualifier	Qualifier
G = Chiropractic	Anatomical Regions	Root Operation	Body Region	Approach	Method	Qualifier
H = Miscellaneous	Body System	Root Operation	Body Region	Approach	Method	Qualifier

³ Table developed from the Final Drafts of the *ICD-10-PCS* Introduction, Training Manual, and Tabular List, HCFA, Internet, Summer 1998. [10PCS.wpd]

For the Medical and Surgical Section (see the column values in the table above) as an example:

The Table of Body Systems (Character 2) shows 29 systems.

The Table of Root Operations (Character 3) shows 28 possibilities.

Approaches (Character 5) listed are 13.

The Tabular Listing is in the form of a grid, the top portion of which contains the first two or three characters of the procedure code (and their translations) along with a description of the procedure. For example, the box at the top of the grid is illustrated in the Working Paper:

Example of box containing first 3 characters of procedure code	
Character 1	0: Surgical
Character 2	9: Ear, Nose, Sinus
Character 3	5: Dilation: Expanding the orifice or the lumen of a tubular body part

Below this header box, the remainder of the grid gives the remaining characters available (“legal”) for the characters in the header. The illustration for code “095,” above is:

Character 4 Body Part	Character 5 Approach	Character 6 Device	Character 7 Qualifier
H Eustachian Tube, Right J Eustachian Tube, Left	1 Open intraluminal 2 Open Intraluminal, Endoscopic B Transorifice Intraluminal C Transorifice Intraluminal Endoscopic	D Intraluminal Device Y Device NEC Z None	Z None

Accompanying this grid is the List of Codes which shows some of the codes which can legally be constructed from the offerings in the grid for “095”:

Table of (Legal) Codes: Examples from Surgical procedures in the Illustrations above	
095H1DZ	Dilation, Eustachian Tube, Right, Open Intraluminal, Intraluminal Device, No qualifier
095H2DZ	Dilation, Eustachian Tube, Right, Open Intraluminal, Endoscopic, Intraluminal Device, No qualifier
and so on	

In this illustration, i.e., for code “095,” 24 legal codes would be possible (2x4x3x1).

The Tabular List for the Medical and Surgical Procedures (Character 1, code 0) for the Male Reproductive System, code “OW.....” looks like:

Male Reproductive System “OW”				
Character 1 Character 2	0: Medical and Surgical W: Male Reproductive System			
Character 3 Root Operation	Character 4 Body Part	Character 5 Approach	Character 6 Device	Character 7 Qualifier
Codes: 19 possible Bypass Change etc.	Codes: 22 possible Prostate Seminal vesicle, right etc.	Codes: 10 possible Open Open, intraluminal etc.	Codes: 12 possible Drainage device Radioactive element etc.	Codes: 4 possible Vas deferens, right Vas deferens, left etc.

The product of these possibilities (19x22x10x12x4) is 200,640 -- the number of codable procedures for the male reproductive system.

The corresponding table for the Female Reproductive System, code “OV.....” is

Female Reproductive System “OV”				
Character 1 Character 2	0: Medical and Surgical xxxxx: Female Reproductive System			
Character 3 Root Operation	Character 4 Body Part	Character 5 Approach	Character 6 Device	Character 7 Qualifier
Codes: 23 possible Bypass Change etc.	Codes: 25 possible Ovary, right Ovary, left etc.	Codes: 10 possible Open Open, intraluminal etc.	Codes: 14 possible Drainage device Radioactive element etc.	Codes: 6 possible Vaginally Fallopian tube, right etc.

Here the arithmetic is 23x25x10x14x6, yielding 482,000 possible procedures.

This despite the statement in the Working Paper:

“The Tabular List “contains only combinations of characters that represent a valid procedure. Combinations of characters that do not constitute a valid procedure are not contained in the Tabular List”

It is probable that not all of these combinations are clinically feasible or likely, but it may not be practical to eliminate all “impossible combinations” in order to produce a computer-processible list of legal codes to be used in editing the data.

In addition to the Tabular Listing of procedures, *ICD-10-PCS* has an alphabetic index and a list of codes. There is no intent that coding can be done from the Alphabetic Index; the user must always refer to the Tabular Listing. An example of the result of this process is as follows:

The user looks up “appendectomy” and finds the:

Alphabetic Index entries:

“...
 Appendectomy
 -see Excision, Gastrointestinal System ODB...⁴
 -see Resection, Gastrointestinal System ODT...
 Appendicectomy (appendectomy and appendicectomy are synonyms – *Stedman*)
 -see Excision, Gastrointestinal System ODB...
 -see Resection, Gastrointestinal System ODT...
 ...”

Reference to the Tabular List found 35 pages (grids) for “OD.”

“ODB...” was on the 8th page, “B” meaning “excision,” defined in *ICD-10-PCS*⁵ as “cutting out or off, without replacement, a portion of a body part.” The rest of the coding was

Character 4, Body Part	J = Appendix
Character 5, Approach	9 possibilities:
0	open
1	open intraluminal
2	open intraluminal endoscopic
3	percutaneous
4	percutaneous endoscopic
5	percutaneous intraluminal
6	percutaneous intraluminal endoscopic
7	transorifice intraluminal
8	transorifice intraluminal endoscopic
Character 6, Device	Z - none
Character 7, Qualifiers	2 possibilities:
X	diagnostic
Z	none

So a “**partial**” appendectomy or appendicectomy could be coded with 18 possible valid codes, depending on the approach:

0DBJ.ZX, 9 codes if called diagnostic
 0DBJ.ZZ, 9 codes if no qualifier is used

⁴ No page references were available in the draft version on the Internet.

⁵ *Stedman’s Electronic Medical Dictionary*, Version 3.0, 1996, defines excision and resection as synonyms.

“ODT....” was on the 24th page, “T” meaning “resection,” defined as “cutting out or off, without replacement, all of a body part.” The rest of the coding was

Character 4, Body Part	J - appendix
Character 5, Approach	9 possibilities (as above)
Character 6, Device	Z – none
Character 7 Qualifiers	Z - none

A “**complete**” appendectomy or appendicectomy could thus be coded with 9 possible valid codes (after the approach is determined):

0DTJ.Z Z (no option that this procedure is diagnostic)

Whether or not the intent is to offer diagnostic appendectomy or to attempt to have surgeons discriminate between resection and excision of the appendix is not clear. Conceivably a patient could have a partial resection of the appendix and later an excision of the remainder.

It seems unlikely that coders will memorize codes.

In the past, in the face of coding systems of such intricacy, abbreviated versions have been forthcoming, usually for a specialty, such as general surgery or ophthalmology, containing only the categories (codes) the author believes will be used by that particular group of users. These specialized versions have been greeted eagerly because of the expectation that 1) only the procedures really done are there and 2) that codes which will give trouble in the reimbursement system have been left out. The down side is that few specialists should need to record only events within their specialties, and not all the codes which would describe the care are offered. The result is that information is left out, and that coding is often done to “the nearest thing.”

The current version of *ICD-10-PCS* is reminiscent of *SNOMED*⁶, which originated as a modular system in which every diagnosis and procedure was constructed from components. In the early days, there was seen no need for the usual single terms for diagnoses, for example. It soon became clear that users wanted to be able to simply state “appendicitis,” and another module, “D: Diseases / Diagnoses,” was added to meet this need. Today, when the developers of electronic medical records state that they are “using *SNOMED*” they are using the single module, “Diseases / Diagnoses.”

End

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⁶ *Systematized Nomenclature of Human and Veterinary Medicine*, College of American Pathologists, 1993.